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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,411	10/17/2003	Kurt M. Schroeder	85593SMR	2211

7590 03/28/2005
Paul A. Leipold
Patent Legal Staff
Eastman Kodak Company
343 State Street
Rochester, NY 14650-2201

EXAMINER

WALKE, AMANDA C

ART UNIT	PAPER NUMBER
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1752

DATE MAILED: 03/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/688,411	Applicant(s) SCHROEDER ET AL.	
	Examiner Amanda C Walke	Art Unit 1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al (6,468,708) in view of Austin et al (6,514,909).

Wang et al disclose a self-contained photohardenable imaging assembly comprising in order: a first transparent support; an imaging layer comprising a developer material and a plurality of photohardenable microcapsules encapsulating a color precursor, and a second support, wherein at least one support comprises a barrier layer that exhibits a low water vapor transmission rate. The imaging assembly has been found to provide better image quality and more consistent sensitometric response to pressure development. The self-contained imaging assembly comprises an imaging layer or series of layers in which a color developing material (also referred to as a color developer) reacts with a dye precursor (also referred to as a color former) inside microcapsules. Typically, the microcapsules encapsulate photohardenable compositions comprising a photosensitive initiator and hardenable material that undergoes a change of mechanical strength when irradiated with light of a predetermined wavelength, wherein the plurality of microcapsules encapsulates at least a dye precursor for coloring when brought into contact with the color developing material. The developer materials employed in carbonless paper technology are useful in the present invention. Illustrative examples are clay minerals such as acid clay, active clay, attapulgite, etc.; organic acids such as tannic acid, gallic

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acid, propyl gallate, etc.; acid polymers such as phenol-formaldehyde resins, phenol acetylene condensation resins, condensates between an organic carboxylic acid having at least one hydroxy group and formaldehyde, etc.; metal salts of aromatic carboxylic acids or derivatives thereof such as zinc salicylate, tin salicylate, zinc 2-hydroxy naphthoate, zinc 3,5 di-tert butyl salicylate, zinc 3,5-di-(a-methylbenzyl)salicylate., oil soluble metals salts or phenol-formaldehyde novolak resins (e.g., see U.S. Pat. Nos. 3,672,935 and 3,732,120) such as zinc modified oil soluble phenol-formaldehyde resin as disclosed in U.S. Pat. No. 3,732,120, zinc carbonate etc. and mixtures thereof. The particle size of the developer material can affect the quality of the image. In one embodiment, the developer particles are selected to be in the range of about 0.2 to 3 microns, preferably in the range of about 0.5 to 1.5 microns. One or more suitable binders selected from polyethylene oxide, polyvinyl alcohol, polyacrylamide, acrylic latices, neoprene emulsions, polystyrene emulsions, and nitrile emulsions, etc. may be mixed with the developer and the microcapsules, typically in an amount of about 1 to 8% by weight, to prepare a coating composition. A preferred developer material is one which provides good compatibility with the microcapsule slurry solution. The self-contained imaging assembly used as photosensitive recording medium is not limited to the embodiments that have been described before, but different variations or modifications thereof are possible. For example, instead of encapsulating the photocurable resin and the polymerization initiator inside the microcapsules of the self-contained imaging assembly, the photocurable resin and the polymerization initiator can also be included in the material constituting the microcapsules. Further, instead of photocurable microcapsules, the self-contained imaging assembly can contain photo-softening microcapsules, for example, microcapsules which have sufficient strength in the unexposed state, and which

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soften when exposed to light of a predetermined wavelength. In this case it is desirable to perform thermal-curing by heat-fixing. In order to insure that the imaging system is effectively sealed between the supports, a subbing layer is provided to attach the transparent support to the imaging layer and an adhesive is provided between the back support and the imaging layer. For optical clarity, the subbing layer will typically be located between the first support and the imaging layer. However, which support receives the subbing layer and which support receives the adhesive is a function of which support is coated with the wet imaging layer composition and which is assembled with the coated and dried imaging layer. The support which is coated with the imaging layer composition (which is typically the front support) will be provided with the subbing layer and the support which is assembled will receive the adhesive. In accordance with the preferred embodiment of the invention, the subbing layer is formed from a compound having chemical moieties such as hydroxy groups which will react with and bind to the microcapsules. The print is "developed," based on the "latent image" formed by the selectively photohardened microencapsulated color formers, by the application of pressure or by the application of both heat and pressure. See, for example, the image forming device described in U.S. Pat. No. 5,884,114 to Iwasaki, in which a photo and pressure sensitive printer provides the feeding and discharging of a photosensitive imaging medium at the front of the printer housing, which device can have the added advantage of being easily integrated into other equipment such as a personal computer. In this particular device, the latent image is formed by a movement in the main scanning direction of an LED-type exposure head. Thereafter, an upper nip roller of a developing mechanism is moved from a separated position to a pressing position. The capsules that have not been photohardened are ruptured by pressure and a full color image is formed on the sheet, heat-

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fixing (which is optional to the present invention) is performed by a film heater, and the imaged assembly is discharged from the front of the housing for the device or printer. A typical pressure-type image-forming device (which can be referred to as a printer) typically comprises a printer housing with a lightproof cartridge for accommodating photosensitive imaging media (alternately referred to as recording media) mounted to the front of the printer housing so as to be easily detachable. In some devices, a preheater is employed for preheating the photosensitive imaging medium. A typical exposure mechanism may include an exposure head for exposing while scanning in a direction perpendicular to the surface of the drawing and a developing mechanism for pressure development by means of a pair of an upper and a lower nip roller. The roller may be maintained under pressure by a spring. An optional fixing heater for heat-fixing the developed photosensitive imaging medium may be used. A discharge tray may be provided at the rear end of the printer housing. The pressure sensitive printer may be designed so that sheets are both fed and discharged at the front side of the printer housing. An image forming device for treatment of the imaging media can, for example, comprise exposure means for forming a latent image on the imaging medium upon exposure based on image information, developing means for developing the latent image by means of the coloring material coming out of the microcapsules when pressure is applied to the photosensitive imaging medium on which the latent image was formed by the exposure means, wherein the developing means comprise a pair of an upper and a lower nip roller facing each other and sandwiching the transport path of the photosensitive imaging medium, pressing means for pressing one nip roller against the other nip roller, roller switching means for alternately switching between a pressing position in which the one nip roller is brought into pressure contact with the other nip roller and a separated position in which the

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one nip roller is separated from the other nip roller, and a transport path for transporting the photosensitive imaging medium comprises a feed path for feeding the photosensitive imaging medium on the inlet side, a discharge path for discharging the recorded photosensitive imaging medium. It appears from the teachings of the reference that the particles and solvent are present in an amount falling within the scope of the instant claims. The reference fails to specifically teach the use of the salicylic acid/ styrene developer.

Austin et al disclose a self-contained sheet for forming an image comprising a support, a first layer of microcapsules containing a color precursor of the electron donating type in a carrier liquid on the surface of the support, a layer of microspheres overlying the microcapsule layer, and a developer material present in at least one of the microcapsule layer or microsphere layer, wherein the developer material can react with the color precursor to form a visible image when the color precursor is released from the microcapsules. Any of the developer materials that has been conventionally used or taught for use in any of the aforesaid recording systems should be useful in the self-contained sheets of this invention. The developer material is selected such that it reacts with the color precursor to produce a high density image. In the most typical embodiments, the color precursor is a substantially colorless electron donating compound of the type conventionally used in the pressure-sensitive recording art and the developer material is a solid particulate electron accepting compound. The developer can be selected from among the developers conventionally used in carbonless paper including acid clay, active clay, attapulgate, etc.; organic acids such as tannic acid, gallic acid, propylgallate; aromatic carboxylic acids such as benzoic acid, p-tert-butyl-benzoic acid, 4-methyl-3-nitro-benzoic acid, salicylic acid, 3-phenyl salicylic acid, 3-cyclohexyl salicylic acid, 3-tert-butyl-5-methyl salicylic acid, 3,5-ditert-butyl

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salicylic acid, 3-methyl-5-benzyl salicylic acid, 3-phenyl-5-(.alpha.,.alpha.-dimethylbenzyl)salicylic acid, 3-cyclohexyl-5-(.alpha.,.alpha.-dimethylbenzyl)salicylic acid, 3-(.alpha.,.alpha.-dimethylbenzyl)-5-methyl salicylic acid, 3,5-dicyclohexyl salicylic acid, 3,5-di-(.alpha.-methylbenzyl)salicylic acid, 3,5-di-(.alpha.,.alpha.-dimethylbenzyl)salicylic acid, 3-(.alpha.-methylbenzyl)-5-(.alpha.,.alpha.-dimethylbenzyl)salicylic acid, 4-methyl-5-cyclohexyl salicylic acid, 2-hydroxy-1-benzyl-3-naphthoic acid, 1-benzoyl-2-hydroxy-3-naphthoic acid, 3-hydroxy-5-cyclohexyl-2-naphthoic acid and the like, and polyvalent metallic salts thereof such as zinc salts, aluminum salts, magnesium salts, calcium salts and cobalt salts; phenol compounds such as 6,6'-methylene-bis(4-chloro-m-cresol); acid polymers such as maleic acid-rosin resin and copolymers of maleic anhydride with styrene, ethylene or vinylmethylether; and aromatic carboxylic acid-aldehyde polymers, aromatic carboxylic acid-acetylene polymers and their polyvalent metallic salts. The reference states that salicylic acid is preferred and is employed in combination with a copolymer, thus it would have been obvious to one of ordinary skill in the art to prepare the developed employing salicylic acid in combination with a maleic anhydride/Styrene copolymer, with reasonable expectation of achieving a material having decreased sludge formation.

Given the teachings of the reference, it would have been obvious to one of ordinary skill in the art to prepare the material of Wang et al choosing to employ the developer of Austin et al (and in amounts falling within the instant claim limitations) with reasonable expectation of achieving a material having better image quality.

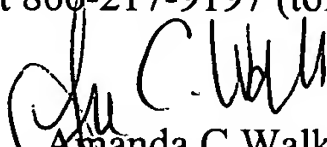
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amanda C Walke whose telephone number is 571-272-1337.

The examiner can normally be reached on M-R 5:30-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Amanda C Walke
Examiner
Art Unit 1752

ACW
March 21, 2005